

WHAT IS CLAIMED IS:

1. Washer equipment for jetting washings to each sweeping area of driver's side and passenger's side windshield of a vehicle, which are swept by driver's side and passenger's side wiper blades, respectively, in such a manner that they synchronize together and move to a same direction, the washer equipment comprising:

a primary jet element and a secondary jet element,

wherein the primary jet element splashes the washings down to a first splashdown disposed in each sweeping area of the driver's side and passenger's side wiper blades, and

wherein the secondary jet element splashes the washings down to a second splashdown disposed upper side of the sweeping area of the driver's side wiper blade and disposed outside an upper reverse position of the passenger's side wiper blade.

2. The washer equipment according to claim 1,

wherein the primary jet element is provided by driver's side and passenger's side primary jet nozzles, which are separated from each other,

wherein the driver's side primary jet nozzle jets the washings toward the first splashdown disposed in the sweeping area of the driver's side, and

wherein the passenger's side primary jet nozzle jets the washings toward the first splashdown disposed in the sweeping area of the passenger's side.

3. The washer equipment according to claim 2,

wherein each primary jet nozzle includes a primary jet outlet for jetting a primary jet by self-oscillating the washings so as to provide a diffusion jet flow having a fan shape.

4. The washer equipment according to claim 3,
wherein the second splashdown is disposed correspondingly to a middle portion of the first splashdown in a lateral direction of the windshield.

5. The washer equipment according to claim 1,
wherein the secondary jet element is provided by a secondary jet nozzle for jetting the washings as a directional jet flow having directivity and being jetted concentrically.

6. The washer equipment according to claim 1,
wherein at least the primary and secondary jet elements of the driver's side are provided by a single washer nozzle.

7. The washer equipment according to claim 1,
wherein the secondary jet element is provided by a secondary jet nozzle, which is independent from the primary jet element for providing the primary jet.

8. The washer equipment according to claim 1,
wherein the primary and secondary jet elements splash the washings before a sweeping operation of each wiper blade in a case where both the driver's and passenger's wiper blades stop at a lower

reverse position.

9. The washer equipment according to claim 6,

wherein the single washer nozzle includes a nozzle body mounted on the vehicle and having a chip accommodation portion, a nozzle chip engaged in the chip accommodation portion water-tightly, a diffusion jet nozzle for jetting the washings as a primary jet, which is a diffusion jet flow diffused in a lateral direction of the windshield, and a directional jet nozzle for jetting a part of the washings as a secondary jet, which is a directional jet flow and independent from the diffusion jet flow,

wherein the nozzle body includes a supply passage for delivering the washings,

wherein both the nozzle chip and an inner wall of the chip accommodation portion of the nozzle body provide a diffusion jet passage and a directional jet passage,

wherein the diffusion jet passage connects the diffusion jet nozzle and the supply passage, and has an oscillation chamber for self-oscillating the washings delivered from the supply passage,

wherein the directional jet passage connects the directional jet nozzle and the supply passage, and is independent from the diffusion jet passage, and

wherein the directional jet nozzle is provided by a through hole connecting to the directional jet passage, the through hole being formed in the nozzle chip independently from the nozzle body.

10. The washer equipment according to claim 9,

wherein the through hole providing the directional jet nozzle has an axial angle in a vertical plane between a horizontal plane and an axis of the through hole, and

wherein the axial angle of the through hole is determined independently from an assembling angle in a vertical plane between the horizontal plane and an assembling axis of the nozzle chip being assembled in the chip accommodation portion.

11. The washer equipment according to claim 9,

wherein the directional jet nozzle includes a jet nozzle rotatably engaged in a concavity of the through hole.

12. Washer equipment for jetting washings to each sweeping area of driver's side and passenger's side windshield of a vehicle, which are swept by driver's side and passenger's side wiper blades, respectively, in such a manner that they synchronize together and move to a same direction, the washer equipment comprising:

a primary jet element and a secondary jet element,

wherein the primary jet element splashes the washings as a primary jet down to a first splashdown disposed in each sweeping area of the driver's side and passenger's side wiper blades, the primary jet being a diffusion jet flow diffused in a lateral direction of the vehicle, and

wherein the secondary jet element splashes the washings as a secondary jet down to a second splashdown disposed upper side of the sweeping area of the driver's side wiper blade and disposed outside an upper reverse position of the passenger's side wiper blade,

the secondary jet being a directional jet flow having directivity, being jetted concentrically, and being independent from the diffusion jet flow.

13. The washer equipment according to claim 12,
wherein the primary jet has a primary jet angle in a vertical plane between the primary jet and a horizontal plane, and the secondary jet has a secondary jet angle in the vertical plane between the secondary jet and the horizontal plane, the secondary jet angle being predetermined in relation to the primary jet angle.

14. The washer equipment according to claim 12,
wherein the primary jet element is provided by driver's side and passenger's side primary jet nozzles, which are separated from each other,

wherein the driver's side primary jet nozzle jets the washings toward the first splashdown disposed in the sweeping area of the driver's side, and

wherein the passenger's side primary jet nozzle jets the washings toward the first splashdown disposed in the sweeping area of the passenger's side.

15. The washer equipment according to claim 14,
wherein each primary jet nozzle includes a primary jet outlet for jetting the primary jet by self-oscillating the washings so as to provide the diffusion jet flow having a fan shape.

16. The washer equipment according to claim 12,
wherein the secondary jet element is provided by a secondary jet nozzle for jetting the washings as the directional jet flow having directivity and being jetted concentrically.

17. The washer equipment according to claim 16,
wherein the primary jet has a distribution of the washings, in which an amount of the washings at both ends of the fan shape of the diffusion jet flow is larger than that at a center portion of the fan shape of the diffusion jet flow, and

wherein the secondary jet concentrically jets as the directional jet flow toward the center portion of the fan shape of the diffusion jet flow.

18. The washer equipment according to claim 12,
wherein at least the primary and secondary jet elements of the driver's side are provided by a single washer nozzle.

19. The washer equipment according to claim 12,
wherein the secondary jet element is provided by a secondary jet nozzle, which is independent from the primary jet element for providing the primary jet.

20. The washer equipment according to claim 12,
wherein the primary and secondary jet elements splash the washings before a sweeping operation of each wiper blade in a case where both the driver's and passenger's wiper blades stop at a lower

reverse position.

21. The washer equipment according to claim 18,

wherein the single washer nozzle includes a nozzle body mounted on the vehicle and having a chip accommodation portion, a nozzle chip engaged in the chip accommodation portion water-tightly, a primary jet nozzle for jetting the washings as the primary jet, and a secondary jet nozzle for jetting a part of the washings as the secondary jet,

wherein the nozzle body includes a supply passage for flowing the washings,

wherein both the nozzle chip and an inner wall of the chip accommodation portion of the nozzle body provide a diffusion jet passage and a directional jet passage,

wherein the diffusion jet passage connects the primary jet nozzle and the supply passage, and has an oscillation chamber for self-oscillating the washings delivered from the supply passage,

wherein the directional jet passage connects the secondary jet nozzle and the supply passage, and is independent from the diffusion jet passage, and

wherein the secondary jet nozzle is provided by a through hole connecting to the directional jet passage, the through hole being formed in the nozzle chip independently from the nozzle body.

22. The washer equipment according to claim 21,

wherein the through hole providing the directional jet nozzle has an axial angle in a vertical plane between a horizontal plane

and an axis of the through hole, and

wherein the axial angle of the through hole is determined independently from an assembling angle in the vertical plane between the horizontal plane and an assembling axis of the nozzle chip being assembled in the chip accommodation portion.

23. The washer equipment according to claim 21,

wherein the directional jet nozzle includes a jet nozzle rotatably engaged in a concavity of the through hole.

24. The washer equipment according to claim 6,

wherein the primary jet element is provided by a primary jet nozzle, and the secondary jet element is provided by a secondary jet nozzle, and

wherein both the primary and secondary jet nozzles are disposed in the single washer nozzle.

25. The washer equipment according to claim 24,

wherein the primary jet nozzle is separated from the secondary jet nozzle.

26. The washer equipment according to claim 24,

wherein the primary jet nozzle is integrated with the secondary jet nozzle.

27. The washer equipment according to claim 18,

wherein the primary jet element is provided by a primary jet

nozzle, and the secondary jet element is provided by a secondary jet nozzle, and

wherein both the primary and secondary jet nozzles are disposed in the single washer nozzle.

28. The washer equipment according to claim 27,
wherein the primary jet nozzle is separated from the secondary jet nozzle.

29. The washer equipment according to claim 27,
wherein the primary jet nozzle is integrated with the secondary jet nozzle.

30. The washer equipment according to claim 9,
wherein the directional jet passage includes a plurality of jet passages branching from the supply passage, and
wherein the directional jet nozzle includes a plurality of through holes connecting to each jet passage, respectively.

31. The washer equipment according to claim 9,
wherein the directional jet passage includes a current plate integrally protruded in the directional jet passage for rectifying directional jet flow.